

JULY 25, 1921

Issue Weekly

PRICE 15 CENTS

# AVIATION AND AIRCRAFT JOURNAL



Aerial View of Coney Island

VOLUME XI

Number 4

## SPECIAL FEATURES

PRESIDENT HARDING FAVORS UNITED AIR SERVICE  
BOMBING TESTS PROVE AIR POWER  
DH-4 EMERGENCY FLOTATION GEAR  
ACROSS THE CENTRAL AMERICAN ANDES  
EXAMINATION OF LAMINATED AIRPLANE SPAR

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HIGHLAND, N. Y.

225 FOURTH AVENUE, NEW YORK

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THE GARDNER, MOFFAT COMPANY, Inc., Publishers

HIGHLAND, N. Y.

225 FOURTH AVENUE, NEW YORK

SUBSCRIPTION PRICE: FIVE DOLLARS PER YEAR. SINGLE COPIES FIFTY CENTS. CANADA, FIVE DOLLARS. THE U.S. AIR MAIL POSTAGE IS PAID BY THE GARDNER, MOFFAT COMPANY, INC.

ADVERTISING RATES: WEEKLY FIVE DOLLARS PER LINE. QUARTERLY FIFTEEN DOLLARS PER LINE. SIX MONTHS THIRTY DOLLARS PER LINE. ONE YEAR FIFTY DOLLARS PER LINE. IN ADVANCE. THE NEW YORK OFFICE OF THE GARDNER, MOFFAT COMPANY, INC., 225 FOURTH AVENUE, NEW YORK.

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# AVIATION AND AIRCRAFT JOURNAL

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Vol. XI

JULY 26, 1921

No. 4

## Air Service Unification

THE announcement that President Harding forces a single department to control all government aviation, military, naval and civil, comes at this time with such surprising suddenness that it is difficult to appreciate the full effect that it will have on aviation in this country.

AVIATION AND AIRCRAFT JOURNAL, which has pointed many of the arguments in favor of such unification since early in the year, is in the issue of March 14, 1921, it foretold the present situation in the following editorial comment:

"On the eve of his resignation President Harding made an announcement to the press which is of the greatest importance to aviation in this country. He is reported as favoring the creation of a Department of Defense, headed by one Colonel officer, which would have three divisions of virtually equal rank, the army, the navy and the air force. Each would be in charge of an order-military."

This news, while hidden in an obscure newspaper report, is cheering to all those who believe that the present method of handling government air activities is unsatisfactory.

The British Ministry of defense has followed the plan but none of the practical workings of it have passed through the experience of all new experiments. Fundamentally, the idea is sound. Strategy, policy and competition have no place in any scheme for national defense. By placing the air force in an equal plane with the army and navy, President Harding will be starting right and it is to be hoped that this consolidation will prove one of the great achievements of the Harding Administration."

After the above announcement was made, the information was circulated that a preliminary discussion might endanger the plan. It was therefore allowed to remain as an unrecorded rumor.

Meanwhile, on the advice of the National Advisory Committee for Aeronautics, the President took a position on aviation that has been regarded as reflecting departmental views. The President now appears to have heard the arguments of unopposed investigation and has decided to approve that plan which makes for efficiency and economy.

## The Bombing Tests of the Warships

WITHOUT touching the technical aspect of the bombing tests made with the ex-Imperial warships on which judgment must be suspended pending the issue of an official report, it can nevertheless be said that the Virginia Coast aircraft proved what their defenders contended, namely, their offensive power against surface vessels.

A submarine, a destroyer, and an armored cruiser were in turn sunk by aircraft bombs. To be more accurate, the cruiser Frothingham, a 5,000-ton ship was sunk by a single 600-lb. bomb. Who can any longer deny the striking power of aircraft?

## Finance Ratio in Airships

THE ratio of the overall length to diameter of an airship, called the Finance ratio, has long been recognized as one of the fundamental factors in its design, although its real effect on construction and performance is only beginning to be thoroughly appreciated. The great difference in dimensions between models and full size airships has made it impossible so far to predict performance from model tests alone. Hence development has largely been determined by the performance of individual ships. This has limited the number of experiments to so few models that it has taken a long time to overcome the fallacies and false positions upon which many airships theories were built.

In particular, the idea that a long slender body is required for attaining high speed has had a most remarkable history. This fallacy may have been due to the fact that the pre-war Zeppelins all had a fineness ratio of from 10 to 12. As these ships were much faster than their non-rigid contemporaries, those which they defied easily through their design, it was naturally assumed that they owed their performance to a high Finance ratio, when in a matter of fact this was mainly due to the suppression of parasite resistance. However, during the war the Finance ratio of the Zeppelins, consistently decreased, until in the post-war airship Bodensee it went below 7. More recent experiments indicate that with the proper lines of curvature good propulsive efficiency may be obtained at very much smaller ratios. In fact, some modern airships, which are notable for the high speed they attain with a comparatively small power plant, have a Finance ratio of only 4, while the Komet, just purchased by the U. S. Army, is only five diameters long.

Another fallacious theory, often heard is that a short ship may be all right for a low resistance but it would be unstable and uncontrollable. The unqualified success of the Goodyear Post Hawk, with a Finance ratio of less than 3½, has definitely disposed of the objection.

More recently the argument has been advanced that a large fineness ratio, rigid construction, would be too heavy for its capability. This is a perfectly valid point if by "rigid construction" there is meant the present Zeppelin type, which with its heavy stay frames and transverse load distribution is not suitable for very fat shapes without considerable modification.

But here again it must be recalled that most of the mystery of the present types will be largely superfluous when the lower Finance ratio comes into general use. In other words, a satisfactory rigidity can be obtained on a fat ship, with far less structural complication than with a slim ship, and the former will be simpler and more practical in every way.

We believe that the proper design to meet these conditions will soon be forthcoming. When it does, the only remaining limitation will be the section size of hangars. For this reason it is of the utmost importance in the consideration of new airship hangars to make them of ample width and height.

# President Harding Favors United Air Service

*Endorses Unification as a Means of Economy and Efficiency*

President Harding on July 14 let it be known that he favors the proposal to place all the aircraft service of the Government military and civil under one central authority.

The New York Times states that:

"There has been an impression that the President was opposed to this plan, especially since Major Gen. Mitchell, Chief of the Air Service of the army, asked the Secretary of War to advise the Assistant Chief, Brig. Gen. William Mitchell, who was a persistent advocate of amalgamation of the army and navy air services. It was learned today, however, that the President is heartily in favor of the proposed amalgamation and that the Joint Board on Governmental Economy, which is engaged in preparing plans for a reorganization of the executive branch of the Government, is inclined to recommend the unification of all the Government's aerial activities.

"The position of President Harding is that amalgamation will work for efficiency and economy. One great difficulty of the present separate aircraft services that has appeared here is that there is no systematic method of avoiding conflicts for the possession of aircraft. Our British allies maintain without regard to any other Government's aircraft requirements, and the President believes that this is detrimental to the upbuilding of private aircraft manufacture in the United States.

"The aircraft manufacturers are dependent almost entirely on Government purchases, as commercial aircraft are very small, and it is claimed that unless the Government purchases

aircrafts as to distribute them among all those agencies which require such service Government standards must be met or they may be obliged to go out of business."

The inference is also drawn from what was learned today of the President's position that he is in favor of the amalgamation of the War and Navy Departments into a Department of National Defense. The plan under consideration by the Reorganization Commission contemplates having a Cabinet officer at the head of this department with Assistant Secretaries under him, in charge of the army, the navy and the aircraft service.

If the plan go through John W. Weeks, Secretary of War, is slated, according to the information, to be the head of the new Department of National Defense. Some other important post, then, would be offered to Edwin F. Beale, Secretary of the Navy.

If the consolidation of the two departments also take the initiative to accomplish a saving of not less than \$150,000,000 a year, to come about through a joint administration of the services, the economy purchase and distribution of supplies, and the reorganization of staff areas and other matters. This is quite independent of the additional saving, conservatively estimated at \$20,000,000 a year, for which the executive has been hoping. Other reductions, such as the reduction of departmental personnel and the prevention of waste of the duplication of effort are now evident in the different branches.

between 2,000 and 2,500 ft. altitude and the Cooper bombs from a bomb house shortly.

The second attack was led by one of the DH-4s at 10:28, and the target began to sink rapidly. It was then that the second direct hit was made by one of the DH-4s. The bomb struck amidships and the target sank at 10:43. The airplane returned to the base and left there alone. The 26 Martins and DH-4s returned 100 bombs of which 31 were dropped, while the parent machines dropped 44 Cooper bombs.

Brigadier General Mitchell flew from Langley field in a DH-4 machine and was over the target when the first machine arrived. He followed both the parent machines and the Martins and DH-4s over the target, frequently approaching it so as to observe the effect of hits.

Procedures were taken against machines having forced landings and destroyers were stationed at seven-mile intervals from the shore to the target.

Major Gen. Charles T. Menckler, Chief of Air Service, visited the target area one of the morning ships in the company of foreign air officials.

## The Bombing of the President

On July 15 the bombing tests of warships were resumed when Army and Navy aircraft attacked the German cruiser Frankfurt and sank her.

The first machine to make the Frankfurt square particular importance from the fact that this vessel escaped severe destruction, whereas the submarine U-137 and the destroyer G-102, previously bombed and sunk by aircraft, were announced as sunk. The Frankfurt was one of the latest type at German light cruisers, laid down in 1915, and completed in September 1915. She took part in the battle of Jutland and was reported

as the first ship to sight the British as the fleets came in contact. She was sunk by her own ship five days after the war ended. She was salvaged and successfully reconditioned. It is able to cruise the Atlantic under steam. The Frankfurt had a successful displacement of about 5,200 tons and a designed speed of 26.5 knots. Her battery consisted of eight 5.9 in. guns and two 30.7 in. torpedo tubes. Her armor protection comprised a side belt 5.9 in. tapering to 3.9 in. forward, and 3 in. aft, and a protection deck of 3.9 in.

The bombing of the Frankfurt, which took place 40 miles off the Virginia Capes, was jointly conducted by the Army and Navy Air Services. The aircraft employed comprised twelve naval F-5-L flying boats, and fifteen Martin bombers of both the Army and Navy Air Services.

The test consisted of two phases, light bombing and heavy



EN-GERMAN ARMORED CRUISER FRANKFURT SUNK BY A 600-LB. AIRCRAFT BOMB ON JULY 15

bombing. Fifty-five bombs, weighing from 250 lb. to 300 lb. each were dropped in the first phase from F-5-L seaplanes and Martin bombers, while in the second phase twenty-four bombs of 520 lb. and 600 lb. each were used. Ten of these were 320-lb. bombs, dropped by naval Martin bombers, and fourteen were 600-lb. bombs dropped by Army Martin bombers.

The bombing attacks started at 9:32 a. m. by the Fourth Division of naval F-5-L seaplanes commanded by Lieutenant Commander Stone, the other pilots being Lieutenants Eddy and Wills, and by the Fifth Division of naval F-5-L seaplanes commanded by Lieutenant Stone, with Lieutenants Eddy and Wills as pilots. The six machines dropped twelve 320-lb. bombs and scored one direct hit shaft of the Frankfurt's foremast.

The second attack was made by a division of two Army Martin bombers piloted by Lieutenants Mayers and Morris, which dropped twelve 300-lb. bombs. No direct hit was made, although one bomb came near hitting the foremast. The spouts of water sent up as the bombs dropped around the ship and the confusion caused by their detonation was felt against the side of the observation vessels at a distance of several thousand yards.

The third attack was made by the Second Division of naval F-5-L seaplanes, piloted by Lieutenants Vane, Carlson and Fardman of the Marine Corps. The three machines dropped ten 320-lb. bombs, but scored no hits.

The fourth attack was made by a Army Martin bomber piloted by Lieutenant Crocker, who dropped six 300-lb. bombs, making one hit. This bomb struck shaft of the aft masthead, throwing deck wreckage into the air. After this attack there was an hour's lull during which the air force of the Navy took the official observers on board the Frankfurt to determine the damage done by the bombs. This respite was that while severe damage had been done to the deck and upper

works of the Frankfurt, the hull seemed intact, for no water was entering.

The bombing was resumed with the fifth attack which was made by the First Division of naval F-5-L seaplanes piloted by Lieutenants Thomas, Kross, Beamish and Guerry, one power along as an observer. The three machines dropped six 320-lb. bombs, but failed to score a hit.

The sixth attack, was made by three Army Martin bombers piloted by Lieutenants Crocker, Graydon and Winkham, who scored three hits. The last hit was made out of the twelve 300-lb. bombs dropped. This attack ended the light bombing tests, and at 2:28 p. m. the heavy bombing phase began.

The first heavy bombing attack was made by the Seventh Division of naval Martin bombers, commanded by Lieutenant Commander Hartlett. The three machines dropped four 320-lb.

bombs, the first bomb landing between the first and second mastheads, tearing up the armored deck of the Frankfurt. Half an hour later the same division dropped six more 320-lb. bombs in two salvos and registered one direct hit aft of the mainmast. The second of the hits by the division when commanded by the board of observers was found to have gone down through the ship and some out of the hull above the water line without doing great damage. It was apparently a "dud" bomb.

By this time the Frankfurt, although badly disabled in her machinery, was still afloat, and plans were being made for the completed first for her destruction by gunfire or by four bombs. While the observers' board was examining the effect of the bombs on the Frankfurt, an Army division of Martins, commanded by Captain Lawson, with Captains Parole and Lieutenants Fox, Baker, Spack and Herre, arrived at the scene. The six machines, four of which carried four 600-lb. bombs each, had come from Langley field with little more fuel than that required for a return flight. As the observers continued to remain on board the target ship Captain Lawson, who was circling overhead with his division, was joined by the Slavians. "Start light bombing within fifteen minutes, fuel limited." The Slavians then drew away from the Frankfurt and signaled to the Army planes: "Proceed to attack."

Captain Lawson's division did as it came. Changing their V formation to single column, his machines began strafing the target. Only four of the Martin bombers actually dropped bombs, fourteen altogether, but their work was so effective that it soon called a halt to the operations of these rival divisions present. They had learned that the Frankfurt could not be sunk by aircraft alone. Of the bombs dropped by the four Army Martin bombers two landed amidships between the 2,000-ft. and 2,500-ft. marks at which the attack was made. These direct hits tore

# Bombing of Warships Proves Air Power

*Martin Bombers of Army Air Service Sink Destroyer G-102 and Cruiser Frankfurt*

The bombing tests the Army and Navy Air Services are conducting with a view to determining the effect of aircraft bombs upon all classes of warships, have afforded two more dramatic instances of the vulnerability of surface vessels to aerial attack. Following the sinking of the German submarine U-117, the destroyer G-102 and the armored cruiser Frankfurt, both on German vessels, were attacked by Army and Navy air units and sunk. Following is a detailed account of these two tests.

## The Bombing of the Destroyer G-102

On July 13 the German destroyer G-102 was bombed and sunk by the Army Air Service in the course of the bombing tests now being carried out. The target was off the Virginia Capes and the attacking machines used were those at Langley field and Hampton Roads.

Brigadier General Mitchell, Assistant Chief of Army Air Service, organized and commanded the operations. That of attacking aircraft consisted of 14 Martin bombers, 14 DH-4s warships, 11 SEEs machines, 2 Capans, and several observation and photographic machines. The Martins and DH-4s carried 300 lb. incendiary bombs while the parent machines carried 600 lb. Cooper bombs for destroying, or forcing below deck, the "personnel" of the target.

Visibility was good with moderate and some low hanging clouds. Operations began at 9 a. m. with the arrival of the first surveillance machines over the target. Half an hour later the SEEs released 40 bombs and scored 30 direct hits. At 10:59 fifteen 34 Martin bombers and 14 DH-4s, altogether, the former releasing 40 bombs and the latter 7. One of these two direct hits were observed while a third bomb hit the bow of the G-102 as it sank. The destruction bombs were dropped









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## Foreign Aerial Transport

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The DeHavilland Co. intends to run a third D.H. 38 passenger airplane capable of carrying 50 passengers on each journey at a speed of 100 m.p.h., the operating cost of which, including all overhead charges, will amount to a fraction of cost of a 2nd. per mile per passenger, or no more than the present railroad first-class fare.

## Belgian Congo

It is reported that the directors of the Forceland Diamond Mines Co. have suggested the transportation of an air service by airplane, which would operate between the mines of Diklo Pwila, on the Kasai (a tributary of the Congo), and Kasheba, on the Congo, from which latter point the railroad runs to Kitalemba, a strategic point on the Congo. The directors offer to defray the greater part of the initial cost of the scheme. In the meantime a survey of the route is being undertaken. The distance from Kasheba to the mines is approximately 200 miles, which could be covered in two days, as contrasted with over a month by the existing river transport.

## French Guinea

From French Guinea come another lesson. Along the River Maroua are valuable gold and forest workings, which have hitherto been handicapped constantly by the narrowness and discomfort of the river transport, situated usually by canoe. Passengers and goods, owing to the rapids, have to be loaded frequently on the river banks, and then reloaded. Now, however, by a service of French airplanes, a voyage up the Maroua, which takes some twenty days by canoe, can be accomplished in a few hours by air.

Apart from the benefit which the Dominion Prince Maurice can bring to them by the utilization of the air, the available districts of connecting "airways" serve the London Times, "the starting of such services, and the provision of machines and equipment for them, is of vital interest to the aircraft industry. Transporters and constructors are in a position to provide airplanes and flying-boats for coastal, river or inter-island flying. There is being developed a new school of design in comparatively slow-flying, big-bodied transport airplanes which would be particularly useful for work overseas and a newly developed craft like the "amphibian", capable of taking down or alighting on, either land or water, should be especially interesting to owners of the Dominion.

## Anglo-Danish Agreement

According to a report by Consul George B. Newmarch, England and Denmark signed on Dec. 23, 1920, an agreement relative to aerial navigation between the two countries. The terms are based on the international convention.

In Denmark airplanes and hydroplanes must descend at Christiania, Elverum, in England airplanes at the present air-ports, and hydroplanes at Folkestone.

The crossing over the Danish frontier may be made at any point, but for England airplanes must enter between Follstade and Naerum and hydroplanes must enter between Olfors and the Naer.

## Aerial Police in Michigan and Canada

Two police organizations which are adding airplanes to their equipment are the well known Royal Canadian Mounted Police and the Michigan State Police.

The former organization adhere to one aircraft in their patrol of the border, where drug and liquor smuggling are running much faster. The Michigan State Police is also planning to check "run-running" by means of aerial patrol, for the use of which several air stations are being established throughout the State.

## Where to Fly

## CALIFORNIA

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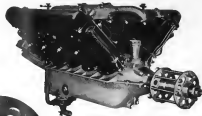
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